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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/516,035	03/01/2000	Robert A. Cohen	US 000050	3183

7590 04/08/2003

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ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 04/08/2003

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 11

Application Number: 09/516,035
Filing Date: March 01, 2000
Appellant(s): COHEN ET AL.

William A. Munck

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 16, 2002.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-4, 6-8 and 11-16 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

6,272,531	Li	8-2001
5,742,892	Chaddha	4-1998

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 6-8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent no. 6,275,531).

Regarding claim 1, Li discloses a method for streaming scalable video including a base layer data and enhancement layer data (See Li's Abstract). The method comprising the steps of transmitting the base layer for a given interval (See Li fig. 1, items 30 and 60, and col. 3, lines 20-21), selecting a predetermined number of frames to distribute (See Li col. 3, lines 39-43). The applicant should duly note that the claimed *"predetermined number of frames"* if found in Li's N number of enhancement layer data. The method comprises the steps of calculating a reduced amount of enhancement layers data to transmit in the predetermined number of frames (See Li col. 3, lines 59-64), and transmitting the reduced amount of enhancement layer data in the given interval (See Li col. 3, lines 58-67 and col. 4, lines 1-3). The applicant should also note that the claimed *"given interval"* is analogous to Li's interval disclosed in col. 1, lines 46-47.

It is noted that Li does not specifically disclose determining loss of bandwidth occurring as one of the factors for effecting the number of enhancement layers to be transmitted as specified in claim 1.

However, the solution provided by Li in col. 3, lines 28-42 is similar as claimed in that when the bandwidth is limited because of various conditions in which loss of bandwidth can be one of them, the amount of enhancement layers may be restricted to satisfy the bandwidth constraint.

Therefore, it is considered obvious that one skilled in the art at the time of the invention having Li before him/her would recognize the advantage of determining if a loss of bandwidth has occurred in a given interval. The motivation for determining if a

loss of bandwidth has occurred in a given interval being that in order to accommodate all the users of a server, only the higher priority coded data will be transmitted while the amount of enhancement layer data will be restricted to satisfy the bandwidth constraint.

As per claim 2, most of the limitations of this claim have been noted in the above rejection of claim 1. In addition, Li further discloses the same method comprising transmitting non-enhancement layer during a given interval (See Li col. 5, lines 48-49, and col. 9, lines 53-55) wherein the guaranteed base layer is a non-enhancement layer.

As per claim 3, most of the limitations of this claim have been noted in the above rejection of claim 1. It is noted that Li is silent about distributing the loss of bandwidth evenly over the predetermined number of frames.

However, in col. 3, lines 30-33, Li discloses that *"in order to try to accommodate all of its users, the server will prioritize the data and only transmit the higher priority coded packets of information".* The step of transmitting only the higher priority data to accommodate all of the users is considered analogous to the step of evenly distributing the loss of bandwidth as claimed.

Therefore, it is considered obvious that one skilled in the art at the time of the invention would recognize the advantage of distributing the loss of bandwidth evenly over the predetermined number of frames. The skilled artisan would be motivated to look to Li's step of accommodating all the users with only the higher priority data since doing so would ensure that every user receive at least the minimum number of frames necessary. As a result of such step, the lowest bandwidth receiver will be able (which constitutes the guaranteed base layer) to reconstruct the video data.

As per claim 4, most of the limitations of this claim have been noted in the above rejection of claim 1.

It is noted Li is silent about determining if there is still space in the given interval in order to transmit at least a portion of a reduced amount of enhancement layer from a second interval as specified in claim 4.

However, in col. 3, lines 60-64, Li discloses *"determining a number of M enhancement layers capable of being received from the transmission channel"*. It should be noted that in order to determine a number of additional enhancement layer data capable of being received from the transmission channel at least the enhancement encoder must determine the amount of space available when negotiating with the network.

Therefore, it is considered obvious that one skilled in the art at the time of the invention would recognize the advantage of determining if there is still space in the given interval in order to transmit at least a portion of a reduced amount of enhancement layer from a second interval. The skilled artisan would be motivated to look to Li's prioritization step (See Li col. 5, lines 41-67) to determine if there is still space in the given interval in order to transmit at least a portion of a reduced amount of enhancement layer from a second interval. The motivation being that if more space is available in the given interval the finer the granulity of the reconstructed video image will be.

As per claim 6, most of the limitations of this claim have been noted in the above rejection of claim 1. In addition, Li discloses the same method for streaming scalable video wherein the enhancement layer has a fine grain scalability structure (See Li col. 3, lines 1-17).

Regarding claim 7, Li discloses a method for streaming scalable video including a base layer data and enhancement layer data (See Li's Abstract). The method comprising the steps of transmitting the base layer for a given interval (See Li fig. 1, items 30 and 60, and col. 3, lines 20-21), selecting a predetermined number of frames (See Li col. 3, lines 39-43). The applicant should duly note that the claimed *"predetermined number of frames"* is found in Li's N number of enhancement layer data. The method comprises the steps of producing a reduced amount of enhancement layer data (See Li col. 3, lines 59-64), and transmitting the reduced amount of enhancement layer data in the given interval (See Li col. 3, lines 58-67 and col. 4, lines 1-3). The applicant should also note that the claimed *"given interval"* is analogous to Li's interval disclosed in col. 1, lines 46-47.

It is noted that Li does not specifically discloses distributing a loss of bandwidth over the predetermined number of frames as one of the factors for effecting the number of enhancement layers to be transmitted as specified in claim 7.

However, the solution provided by Li in col. 3, lines 28-42 is similar as claimed in that when the bandwidth is limited because of various conditions in which loss of bandwidth can be one of them, the amount of enhancement layers may be restricted to satisfy the bandwidth constraint.

Therefore, it is considered obvious that one skilled in the art at the time of the invention having Li before him/her would recognize the advantage of distributing a loss of bandwidth over the predetermined number of frames to produce a reduced amount of enhancement layer data. The motivation for distributing a loss of bandwidth over the predetermined number of frames to produce a reduced amount of enhancement layer data being that in order to accommodate all the users of a server of a transmission channel when various conditions in which loss of bandwidth is sometimes inevitable,

only the higher priority coded data will be transmitted while the amount of enhancement layer data will be restricted in order to meet the bandwidth constraint.

As per claim 8, most of the limitations of this claim have been noted in the above rejection of claim 7.

It is noted that Li is silent about distributing the loss of bandwidth evenly over the predetermined number of frames.

However, in col. 3, lines 30-33, Li discloses that *"in order to try to accommodate all of its users the server will prioritize the data and only transmit the higher priority coded packets of information".* The step of transmitting only the higher priority data to accommodate all of the users is considered analogous to the step of evenly distributing the loss of bandwidth as claimed.

Therefore, it is considered obvious that one skilled in the art at the time of the invention would recognize the advantage of distributing the loss of bandwidth evenly over the predetermined number of frames. The skilled artisan would be motivated to look to Li ' step of accommodating all the users with only the higher priority data since doing so would ensure that every user receive at least the minimum number of frames necessary in other words, the lowest bandwidth receiver will be able (which constitutes the guaranteed base layer) to reconstruct the video data.

Regarding claim 11, Li discloses an apparatus for streaming scalable video including a base layer data and enhancement layer data (See Li's Abstract). The apparatus comprising means for transmitting the base layer for a given interval (See Li fig. 1, items 30 and 60, and col. 3, lines 20-21), means for selecting a predetermined number of frames to distribute (See Li col. 3, lines 39-43). The applicant should duly note that the

claimed *"predetermined number of frames"* is found in Li's N number of enhancement layer data. The apparatus comprises the means for calculating a reduced amount of enhancement layers data to transmit in the predetermined number of frames (See Li col. 3, lines 59-64), and means for transmitting the reduced amount of enhancement layer data in the given interval (See Li col. 3, lines 58-67 and col. 4, lines 1-3). The applicant should also note that the claimed *"given interval"* is analogous to Li's interval disclosed in col. 1, lines 46-47.

It is noted that Li does not specifically discloses means for determining loss of bandwidth occurring as one of the factors for effecting the number of enhancement layers to be transmitted as specified in claim 1.

However, the solution provided by Li in col. 3, lines 28-42 is similar as claimed in that when the bandwidth is limited because of various conditions in which loss of bandwidth can be one of them, the amount of enhancement layers may be restricted to satisfy the bandwidth constraint.

Therefore, it is considered obvious that one skilled in the art at the time of the invention having Li before him/her would recognize the advantage of determining if a loss of bandwidth has occurred in a given interval. The motivation for determining if a loss of bandwidth has occurred in a given interval being that in order to accommodate all the users of a server when various conditions in which loss of bandwidth is sometimes inevitable, only the higher priority coded data will be transmitted while the amount of enhancement layer data will be restricted to maintain the bandwidth constraint.

3. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li (US Patent no. 6,275,531) in view of Chaddha (US Patent no. 5,742,892).

Regarding claim 9, Li discloses streaming scalable video including a base layer data and enhancement layer data (See Li's Abstract). Transmitting the base layer for a given interval (See Li fig. 1, items 30 and 60, and col. 3, lines 20-21), selecting a predetermined number of frames to distribute (See Li col. 3, lines 39-43). The applicant should duly note that the claimed *"predetermined number of frames"* is found in Li's N number of enhancement layer data. Calculating a reduced amount of enhancement layers data to transmit in the predetermined number of frames (See Li col. 3, lines 59-64), and transmitting the reduced amount of enhancement layer data in the given interval (See Li col. 3, lines 58-67 and col. 4, lines 1-3). The applicant should also note that the claimed *"given interval"* is analogous to Li's interval disclosed in col. 1, lines 46-47.

It is noted that Li does not specifically discloses determining loss of bandwidth occurring as one of the factors for effecting the number of enhancement layers to be transmitted as specified in claim 1.

However, the solution provided by Li in col. 3, lines 28-42 is similar as claimed in that when the bandwidth is limited because of various conditions in which loss of bandwidth can be one of them, the amount of enhancement layers may be restricted to satisfy the bandwidth constraint.

Therefore, it is considered obvious that one skilled in the art at the time of the invention having Li before him/her would recognize the advantage of determining if a

loss of bandwidth has occurred in a given interval. The motivation for determining if a loss of bandwidth has occurred in a given interval being that in order to accommodate all the users of a server, when various conditions in which loss of bandwidth is sometimes inevitable, only the higher priority coded data will be transmitted while the amount of enhancement layer data will be restricted in order to maintain the bandwidth constraint.

It is also noted that although Li accomplishes the decoding of the multiplexed streams with the algorithm of flow diagrams 1100-1400 of fig. 11-14 (See Li col. 6, lines 13-15 and fig. 11-14), it is silent about the memory medium including code for streaming scalable video as specified in claim 9.

However, Chaddha discloses a memory medium including code for streaming scalable video (See Chaddha fig. 1, server 20 with memory medium 80, and col. 4, lines 27-58).

Therefore, it is considered obvious that one skilled in the art at the time of the invention would recognize the advantage of providing a memory medium including code in Li's server of the steps of streaming scalable video (which is suggested by Li since it provides a server along with the methods and algorithms as disclosed in col. 6, lines 13-15). The motivation for modifying Li is to satisfy the need to provide encoding such that a server storing the code outputs embedded data streams from which decoders may extract video having different spatial resolutions, temporal resolutions and data rates as taught by Chaddha (See Chaddha col. 1, lines 17-21 and col. 2, lines 44-48).

Regarding claim 10, Li discloses streaming scalable video including a base layer data and enhancement layer data (See Li's Abstract). Transmitting the base layer for a given

interval (See Li fig. 1, items 30 and 60, and col. 3, lines 20-21), selecting a predetermined number of frames to distribute (See Li col. 3, lines 39-43). The applicant should duly note that the claimed *"predetermined number of frames"* is found in Li's N number of enhancement layer data. Calculating a reduced amount of enhancement layers data to transmit in the predetermined number of frames (See Li col. 3, lines 59-64), and transmitting the reduced amount of enhancement layer data in the given interval (See Li col. 3, lines 58-67 and col. 4, lines 1-3). The applicant should also note that the claimed *"given interval"* is analogous to Li's interval disclosed in col. 1, lines 46-47.

It is noted that Li does not specifically discloses determining loss of bandwidth occurring as one of the factors for effecting the number of enhancement layers to be transmitted as specified in claim 1.

However, the solution provided by Li in col. 3, lines 28-42 is similar as claimed in that when the bandwidth is limited because of various conditions in which loss of bandwidth can be one of them, the amount of enhancement layers may be restricted to satisfy the bandwidth constraint.

Therefore, it is considered obvious that one skilled in the art at the time of the invention having Li before him/her would recognize the advantage of determining if a loss of bandwidth has occurred in a given interval. The motivation for determining if a loss of bandwidth has occurred in a given interval being that in order to accommodate all the users of a server, when various conditions in which loss of bandwidth is sometimes inevitable, only the higher priority coded data will be transmitted while the amount of enhancement layer data will be restricted in order to maintain the bandwidth constraint.

It is also noted that although Li accomplishes the decoding of the multiplexed streams with the algorithm of flow diagrams 1100-1400 of fig. 11-14 (See Li col. 6, lines 13-15 and fig. 11-14), it is silent about a memory which stores executable codes for streaming scalable video as specified in claim 10.

However, Chaddha discloses a memory, which stores executable codes for streaming scalable video (See Chaddha fig. 1, server 20 with memory medium 80, and col. 4, lines 27-58).

Therefore, it is considered obvious that one skilled in the art at the time of the invention would recognize the advantage of providing a memory which stores executable codes in for streaming scalable video in Li's server (which is suggested by Li since the prior art provides a server along with the methods and algorithms as disclosed in col. 6, lines 13-15). The motivation for modifying Li is to satisfy the need to provide encoding such that a server which stores the executable codes outputs embedded data streams from which decoders may extract video having different spatial resolutions, temporal resolutions and data rates as taught by Chaddha (See Chaddha col. 1, lines 17-21 and col. 2, lines 44-48).

(11) Response to Argument

Note: A quick review of the Appellant's arguments shows that the appellant does not use the same terminology as that expressed in the claims, which might lead to misinterpretation by a third party. Although the claim language is not similar to what is being argues, the Examiner will answer the arguments in such a way that a quick look at the claims will confirm the Examiner's position.

The Appellant argues that US Patent no. 6,292,512 was never cited as the basis for any rejection, and that the Examiner's prior knowledge of the reference creates the appearance of "sandbagging" in the intent of dismissing the applicant's arguments as "moot of new grounds of rejection". While the Examiner understands the Appellant concerns, he respectfully disagrees. The Examiner reminds the Appellant that He/She failed to disclose US Patent no. 6,292,512 as per 37 CFR 1.97 in an Information Disclosure Statement. The Appellant should have at least mentioned the cited reference in the response to the first Office Action or in the After Final Action since such Patent is co-owned and was also known to the appellant when those responses were forwarded to the Patent Office. The previously cited prior art, namely Li and Chaddha, did meet the limitations of the application as indicated in the previously mailed Office actions (paper nos. 4, and 6). In other words, there was no need for the Examiner to hide the reference for the purpose of "sandbagging" as alleged by the Appellant. In fact, it was the Examiner's belief that making such note regarding relevant prior art before a letter patent is published would help the Appellant in better amending the claims. The Appellant's own words prove that the Examiner had no intention of "sandbagging" since no new grounds of rejection under 35 U.S.C. 102 or 35 U.S.C. 103 was introduced along with the note (See Appellant brief on appeal pages 6-7).

The Appellant further argues that each independent claim recites "a given interval" and thus requires that the streaming video data be logically divided into time intervals. While

the Examiner understands the Appellants argument, the Examiner wishes to point to Li col. 5, lines 47-56 which is a more detailed definition of the previously cited section of Li (i.e. col. 1, lines 46-47). The Applicant should also note that Li clearly indicates that the scalable video coding technique is very desirable for transmitting video over a time varying bandwidth. Therefore, the step of providing "a given interval" in Li is rather inherent (See Li col. 2, lines 28-37, and col. 8, lines 64-67).

The Appellant further argues that Li does not relate to streaming. The Examiner respectfully disagrees since streaming is disclosed in Li's col. 3, lines 5-16.

The Appellant further argues that Li does not dynamically transmit bitstreams during each of a number of intervals during transmission. The Examiner respectfully disagrees; because in col. 4, lines 4-13, Li particularly disclose a scalable method adapting to the bandwidth of the transmission channel the input video. In addition, the adaptive scalability of the transmission channel as disclosed in Li's col. 3, lines 44-58 is considered as the claimed "dynamic" transmission of the bitstreams.

The appellant further argues that the claims recite "determining whether a loss of bandwidth has occurred during a particular interval". And that the office action concedes that such function is not shown in Li. While the Examiner understands the Appellant's argument, the section referred to in the last office action clearly indicated that if Li identifies various conditions indicating a loss of bandwidth; and since Li

acknowledges that this condition occurs during a time varying bandwidth. It implies that such step of "determining whether a loss of bandwidth has occurred during a particular interval", or any portion the maximum bandwidth, is necessary in Li as disclosed in col. 5, lines 62-67, col. 6, lines 1-4 as well as the previously cited col. 3, lines 28-42.

The Appellant further argues that the claims recite "adapting the transmission to any loss of bandwidth during the given interval by calculating a reduced amount of enhancement data". And such feature is not shown or suggested in the prior art. The Examiner respectfully disagrees since Li provides the adapting step in col. 3, lines 44-64 wherein the method includes determining the number of layers bitstreams capable of being adapted to the bandwidth.

The Appellant further argues that Li teaches adapting an entire video data stream to constraints such as available bandwidth for a particular client, or the priority of concurrently transmitted video data streams, but does not teach or suggest adapting the granulity of the video stream during streaming to accommodate the loss of bandwidth. The Examiner respectfully disagrees since in col. 6, lines 1-7, Li particularly discloses that the server knows the condition of the transmission channel due to congestion and other physical constraints, and selectively sends bitstreams to the channel. In addition, since Li discloses a scalable coding process, adapting the granulity during the streaming is rather expected (See Li col. 2, lines 29-37).

The Appellant should also note that Li discloses the same method comprising transmitting non-enhancement layer during a given interval (See Li col. 5, lines 48-49, and col. 9, lines 53-55) wherein the guaranteed base layer is a non-enhancement layer, and since Li determines the minimum number of bits in a frame, this minimum is considered as the minimum required for the base layer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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March 24, 2003

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